<u>REMARKS</u>

Claims 1-14, 16-36, 39-40, and 65-79, and 81-93 are pending. Claims 1, 26, 39 and 93 are independent claims. Reconsideration of the present application is respectfully requested.

<u>Statement of Substance of Interview of October 7, 2009</u>

The undersigned appreciates the opportunity to have met with Examiner Lee during the personal interview conducted on October 7, 2009. As noted in the Interview Summary, the undersigned and Examiner Lee discussed the Office's suggested combination of US 2006/0073810 ("Pyhalammi") and US 2002/0095228 ("Corts") in the rejection of claim 1. During the interview, the undersigned pointed out that Pyhalammi relates to a *client-server system* where a user can request content from a computer server with a mobile device such as a cellular telephone, whereas the system of Corts relates to the broadcasting of content via in-band on-channel transmission, which is a form of digital radio broadcasting that occurs over the AM-band and FM-band radio broadcasting frequencies. The undersigned also pointed out various deficiencies in the rejection set forth in the Office Action of June 9, 2009:

- The rejection is premised upon flawed reasoning. Pyhalammi's system *already provides* digital audio and digital data services that the Office suggests should be obtained from Corts. One skilled in the art would not seek to increase the complexity and cost of Pyhalammi's system by including features from the system of Corts to purportedly provide something that Pyhalammi's system *already provides*.

- There would be no expectation of success in the Office's hypothetical combination. The undersigned pointed out that the Office's hypothetical combination of Pyhalammi and Corts would require a *request* for data content to be sent from Pyhalammi's user of a cellular phone over cellular telephone frequencies and architecture, whereas a *response* to that request would then hypothetically be *broadcast* via Corts's IBOC frequencies (different from cellular frequencies) and architecture. As such, the responsive broadcast transmission would be received by anyone who was tuned in to that IBOC frequency, even those individuals who did not request that data content and do not want it. Whereas cellular phone communications are readily appreciated to essentially be private communications between parties, IBOC digital radio broadcast transmissions over the commercial radio AM-band and FM-band broadcast

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frequencies can be received by anyone who tunes in. The undersigned explained that the "expectation of success" in this regard is not simply whether an IBOC chip can be placed in a cellular phone to provide an independently functioning IBOC radio tuner (as the Examiner had been treating the subject matter). Rather, the expectation of success in the Office's hypothetical modification would need to measured by whether Pyhalammi's modified system (as summarized above) would provide a successful system for providing content. Clearly it would not. Broadcast radio listeners with IBOC tuners want to hear the programming they expect, including regularly scheduled programming of various shows by their favorite radio personalities. Radio listeners would not want the programs they enjoy to be interrupted by particular, unrelated content requested by some other individual via his cellular telephone. Such a system plainly does not make sense, but that is what the Office has essentially proposed.

- The Office's hypothetical combination would not satisfy the limitation of processing data content to be pushed to the digital radio broadcast receivers of the users via digital radio broadcast transmission *without user-initiated requests for the data content*. Pyhalammi's system is a client server system that requires a user-initiated request for content, which a server computer then fulfills by sending the requested data content. It is the foundation of Pyhalammi's system. The Office's rejection does not overcome this substantial difference between what Pyhalammi discloses and what is being claimed.

- The Office's rejection is internally consistent. In attempt to address the above-noted limitation of processing data content without a user-initiated request for the data content, the Office Action substantially changes its position in a facially inconsistent manner. Whereas the Office structures the foundation of its rejection to rely upon the scheduling of Pyhalammi, the Office then, in responding to Applicants' arguments, cites to Corts paragraph 0207 for the proposition that data content is broadcast at regular intervals during particular times of day in Corts regardless of whether a user initiates a request for the data. In doing so, the Office is plainly citing how data is scheduled in Corts. The Office cannot on one hand cite the scheduling of Pyhalammi in building its rejection, and then substantially change theories to rely upon scheduling of Corts as an afterthought in responding to Applicants' arguments.

These and other points will be further explained below.

Objections

The Office Action includes objections to claims 90-92 for antedence issues. Claims 90-92 have been amended as suggested by the examiner, and withdrawal of the objection is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 8, 13-14, 16, 18, 21-23, 25, 66, 73, 78-79, 83, 86-87, 89-90 and 93 stand rejected under 35 U.S.C. § 103(a) over U.S. Publication No. 2006/0073810 ("Pyhalammi") in view of U.S. Publication No. 2002/0095228 ("Corts"). Claims 5, 20, 26, 39, 65, 85, and 91-92 stand rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of U.S. Patent No. 6,745,237 ("Garrity"). Office Action at p. 7. In particular, the Office alleges that Pyhalammi discloses all of the features recited in independent claims 1 and 93 except for an encoder for encoding data content and transmission via digital radio broadcast transmission to a digital radio broadcast receiver. See, e.g., Office Action at pp. 3-4. The Office alleges that these features missing from Pyhalammi are disclosed in Corts, and that it would have been obvious to combine those features with Pyhalammi's system "to utilize In-Band On-Channel (IBOC) technology to broadcast digitized data along with the digital audio to wireless devices." Office Action at p. 4. The Office's interpretations and suggested hypothetical combination are respectfully traversed.

As an initial matter, it is worthwhile to compare subject matter claimed to that of Pyhalammi and Corts relied upon by the Office. Claim 1, for example, recites a digital radio broadcasting system for processing over the air transmissions of data content. The digital radio broadcasting system includes a gateway that comprises a processing system and a memory coupled to the processing system. The processing system comprises a network inbound queue for the reception of data content and instructions from a content provider; a scheduler for processing said instructions from the content provider to determine broadcast times and schedule for said data content to be received by digital radio broadcast receivers of users. The processing system also comprises an encoder for encoding said data content for digital radio broadcast transmission; an addressing module for processing said instructions for extracting addressing information; and an outbound queue for storing said encoded data content. The digital radio broadcast system processes the data content to be pushed to the

digital radio broadcast receivers of the users via digital radio broadcast transmission without user-initiated requests for said data content.

Thus, claim 1 explicitly requires a "push" scenario in which data content is processed to be pushed to digital radio broadcast receivers of users via digital radio broadcast transmission *without user-initiated requests* for that data content whatsoever. In other words, the data content is processed at the transmit side for digital radio broadcast transmission regardless of any actions of the users of the digital broadcast receivers. The users of the digital radio broadcast receivers do not request data content whatsoever, they merely "tune in" if they wish to receive it. Indeed, as noted at paragraph 0004 of the present application, radio broadcast transmissions are sent out (pushed) regardless of whether or not anyone is even tuned in.

In contrast, the system of Pyhalammi is vastly different than that recited in claim 1. Pyhalammi discloses a method for delivering mobile content over a cellular wireless network wherein *a specific user* of a hand-held wireless device, such as a cellular phone equipped to access information from the Internet, *actively submits a request for content*, and that content is then transmitted to that specific user in response to the user's content request. (*See*, e.g., Pyhalammi at paragraphs 0007, 0020.) This form of communication is *pull* technology, since the communication involves requesting data from another source. As noted at paragraph 0006 of the present application, "Pull refers to requesting data from another program or computer. The opposite of Pull is Push, where data is sent without a request being made." Thus, the pull-type radio communication in Pyhalammi's system is vastly different than the push-type digital radio broadcast required by claim 1.

In fact, Pyhalammi's disclosure explicitly reflects that the user's active request for content is central to Pyhalammi's system:

> In a preferred embodiment of the invention there is provided a system and method whereby *a user who has requested content* selects a class of delivery for the content . . . . Pyhalammi at paragraph 6 (emphasis added);

> In a preferred embodiment, a *user's content request* is sent to a Content/Service Provider which creates a content delivery message with the requested information including the content and delivery class. Pyhalammi at paragraph 7 (emphasis added);

> The ***end-user locates content he wishes to receive*** via a browsing screen 31 on his wireless terminal device 30. On the screen, the ***end-user selects the content*** and the desired class of delivery. Pyhalammi at paragraph 22 (emphasis added);
>
> ***User browses*** content via wireless terminal device. Pyhalammi, Fig. 4, Step 40 (emphasis added);.
>
> ***User orders*** content. Pyhalammi, Fig. 4, Step 41 (emphasis added).

Indeed, the Office Action of 12/18/2007 at page 20, paragraph 77 expressly acknowledged that the ***user*** of Pyhalammi's system is responsible for selecting the content ("the delivery class is automatically selected based on the user selected content . . . .").

The Office relies upon Corts for disclosure of broadcasting content via in-band on-channel (IBOC) transmission, which is a form of digital radio broadcasting that occurs over the AM-band and FM-band radio broadcasting frequencies. Corts states, for example:

> In-band On-Channel (IBOC) is an emerging Digital Audio Broadcasting (DAB) technology, developed by iBiqutiy Digital, Inc., that enables radio broadcasters to transmit digital data ('the data') over their current analog transmission frequencies. Corts at paragraph 0002.

Similarly, the present application states:

> Currently, approximately 10,000 radio stations are located throughout the U.S.A., reaching a vast audience. U.S. radio stations are operating with analog technology and are almost evenly divided between two broadcast spectrums: amplitude modulation (AM) at 0.525-1.705 MHz and frequency modulation (FM) at 88-108 MHz. A new emerging technology known as in-band on-channel (IBOC) allows these radio stations to deploy digital transmission technology within existing bandwidths allocated to the AM and FM stations. Present Application at paragraph 0008.

The Office alleges that it would have been obvious to transmit the data content of Pyhalammi's cellular client-server system via the IBOC radio broadcasting of Corts so as to

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broadcast digitized data along with the digital audio to wireless devices. Office Action at p. 4. Applicants respectfully traverse the Office's allegations at least for the reasons set forth below. The arguments provided below are applicable not only to independent claim 1 but also to independent claims 26, 39 and 93. This is true since even though the Office relies upon additional references beyond Pyhalammi and Corts in rejecting claims 26 and 39, the Office's reliance upon additional references does not remedy the deficiencies of the rejection in relying upon Pyhalammi and Corts.

A. The rejection doe not make out a *prima facie* case of obviousness because it does not state a proper reason for the hypothetical combination of references

The rejection does not make out a *prima facie* case of obviousness at least because the Office's hypothetical combination of Pyhalammi and Corts is premised upon flawed reasoning. In particular, Pyhalammi's system *already provides* digital audio and digital data services that the Office suggests should be obtained from Corts. One skilled in the art would not seek to increase the complexity and cost of Pyhalammi's system by including features from the system of Corts to purportedly provide something that Pyhalammi's system *already provides*.

In particular, as noted above, the Office Action alleges that it would have been obvious to combine features of Corts with those of Pyhalammi "to utilize In-Band On-Channel (IBOC) technology *to broadcast digitized data along with the digital audio to wireless devices.*" Office Action at p. 4 (emphasis added). This reasoning is facially flawed insofar as Pyhalammi's system *already provides both the digitized data and digital audio* that the user of Pyhalammi's system desires. Claim 10 of Pyhalammi, for example, explicitly indicates that the content can include audio as well as other types of data – text, pictures, video, and browsing information ("The method of claim 1 wherein said content is comprised of different types of messages, such as: text, pictures, audio, video, and browsing information."). Pyhalammi's disclosure makes it plainly evident that this information is digital in nature (*see, e.g.*, paragraph 0020 of Pyhalammi, "an individual . . . may use a hand-held wireless terminal 30 . . . enabled with a browser to view and select web-based content from a Content/Service Provider 13 via a data network such as the internet."). Moreover,

paragraph 0008 of Pyhalammi explicitly states that Pyhalammi's alleged invention will provide "new data services":

> The present invention will introduce a mechanism that allows operators to provide *new data services* (especially high-volume content) cheaper without sacrificing their high-margin business, thus enabling more services, as well as attracting more users. The present invention further allows *data traffic* on a wireless network to be more evenly distributed over a twenty-four hour day cycle, thus actually increasing the total network throughput, without having to upgrade the wireless network components. The present invention will provide users with new services at a reduced price, directly to their wireless device.

Paragraph 0008 of Pyhalammi (emphasis added).

Thus, it is clear that Pyhalammi's system already provides for digitized data and digital audio that the Office cites as a basis for borrowing features from Corts. Contrary to the Office's suggestion, there would be no reason for one skilled in the art to seek digital data and digital audio services according to the system of Corts when both digital data and digital audio services are already provided by Pyhalammi's system. One skilled in the art would not seek to increase the complexity and cost of Pyhalammi's system by including features from the system of Corts "to broadcast digitized data along with the digital audio to wireless devices" *when Pyhalammi's system already provides those services*. Accordingly, the Office's proffered reason for the hypothetical combination is facially flawed and is suggestive of impermissible hindsight reasoning. Withdrawal of the rejection is respectfully requested for at least these reasons.

B. The rejection doe not make out a *prima facie* case of obviousness because there would have been no reasonable expectation of success

One skilled in the art would not have found it obvious to modify the Pyhalammi system to use the in-band on-channel (IBOC) broadcasting of Corts as suggested by the Office since there would have been no reasonable expectation of success. As the Office is aware MPEP 2143.02 requires that there be a reasonable expectation of success for a proper obviousness rejection. The Office contends that there would be an expectation of success in

combining IBOC of Corts with Pyhalammi's system because Corts paragraph 0021 discloses using IBOC chip sets with cellular phones and computers. Office Action at p. 19. As noted above, however, whether an IBOC chip can be implanted into a cellular phone to provide the user with a radio tuner is *not* the proper the measure of success in the Office's hypothetical system because that is not what is being claimed. The present application does not claim a combination where an IBOC chip can be used as independent, add-on component to provide radio reception for a cellular phone user. Rather, the claims require particular scheduling of data content that is processed for *digital radio broadcast transmission*, i.e., to anyone who tunes in.

As noted above, there would be no expectation of success in the Office's hypothetical combination since the Office's hypothetical combination of Pyhalammi and Corts would require a *request* for data content to be sent from Pyhalammi's user of a cellular phone over cellular telephone frequencies and architecture, whereas a *response* to that request would then hypothetically be *broadcast* via Corts's IBOC frequencies (different from cellular frequencies) and architecture. As such, the responsive broadcast transmission would be received by anyone who was tuned in to that IBOC frequency, even those individuals who did not request that data content and do not want it. Whereas cellular phone communications are readily appreciated to essentially be private communications between parties, IBOC digital radio broadcast transmissions over the commercial radio AM-band and FM-band broadcast frequencies can be received by anyone who tunes in. Thus, the "expectation of success" in this regard is not simply whether an IBOC chip can be placed in a cellular phone to provide an independently functioning IBOC radio tuner (as the Examiner had been treating the subject matter). Rather, the expectation of success in the Office's hypothetical modification would need to measured by whether Pyhalammi's modified system (as summarized above) would provide a successful system for providing content. Clearly it would not. Broadcast radio listeners with IBOC tuners want to hear the programming they expect from a given radio station, including regularly scheduled programming of various shows by their favorite radio personalities. Radio listeners would not want the programs they enjoy to be interrupted by particular, unrelated content requested by some other individual via his cellular telephone. Such a system plainly does not make sense, but that is what the Office has essentially proposed.

The fact that cellular transmission frequencies are different than the AM and FM frequencies where Corts' IBOC transmission would occur is also notable. The Federal Communications Commission specifically regulates and allocates radio spectrum to different uses and different types of devices. For example, a 2003 chart of the "United States Frequency Allocations" for the radio spectrum is attached hereto, and may be downloaded via the Internet http://www.fcc.gov/mb/engineering/usallochrt.pdf for viewing at full size (in reduced form as attached the smallest text is not readable). Even in reduced form, this chart reflects the immense complexity and detail with which the FCC regulates and allocates radio spectrum. Notably, there is no overlap between the frequencies allocated to "Broadcasting (AM Radio)" and "Broadcasting (FM Radio)", which have been labeled by hand as "AM" and "FM" respectively, relative to any frequencies allocated to mobile telephones. One skilled in the art clearly would not seek to commingle the two-way communication that occurs over cellular transmission frequencies of Pyhalammi's system with the one-way broadcast transmission that occurs over the AM and FM broadcast frequencies where the IBOC of Corts operates into some hybrid form of communication that would contravene the framework and device operation for such frequencies as regulated by the FCC.

C. The Office's hypothetical combination would not yield the combination of features claimed

The Office's hypothetical combination would not satisfy the limitation of processing data content to be pushed to the digital radio broadcast receivers of the users via digital radio broadcast transmission *without user-initiated requests for the data content*. Pyhalammi's system is a client-server system that requires a user-initiated request for content, which a server computer then fulfills by sending the requested data content to the specific individual who requested it. It is the foundation of Pyhalammi's system. The scheduling of Pyhalammi's system, as explained above, is premised upon the individual user's request for data content. By way of reminder, Pyhalammi states, among other things, the following:

> In a preferred embodiment of the invention there is provided a system and method whereby *a user who has requested content* selects a class of delivery for the content . . . . Pyhalammi at paragraph 6 (emphasis added);

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> In a preferred embodiment, a *user's content request* is sent to a
> Content/Service Provider which creates a content delivery message
> with the requested information including the content and delivery
> class. Pyhalammi at paragraph 7 (emphasis added);

As noted above, taking the Office's rejection at face value, the hypothetical combination would require a *request* for data content to be sent from Pyhalammi's user of a cellular phone over cellular telephone frequencies and architecture, whereas a *response* to that request would then hypothetically be *broadcast* via Corts's IBOC frequencies (different from cellular frequencies) and architecture. While Applicants' strongly disagree that one skilled in the art would devise such a system, such a hypothetical system would still require the user's request for data content. As such, the hypothetical combination would not yield the combinations of features claimed in the independent claims.

D. To the extent that the Office advocates hypothetically modifying Pyhalammi to negate the request for content by Pyhalammi's user, such a modification would render Pyhalammi's system unsuitable for its intended purpose.

One skilled in the art would not modify Pyhalammi's system to negate Pyhalammi's user request for data content since doing so would render Pyhalammi unsuitable for its intended purpose. As the Office is aware, MPEP 2143.01(V) states that a proposed modification cannot render the prior art unsuitable for its intended purpose. As noted in Section C above, Pyhalammi's system is a client-server system that requires a user-initiated request for content, which a server computer then fulfills by sending the requested data content to the specific individual who requested it. The intended purpose of Pyhalammi's system is to respond to and fulfill a individual user's request for data content. Indeed, it is the foundation of Pyhalammi's system. The communication framework of Pyhalammi's system is built upon the foundation of a client-server model that requires the user to actively request content.

The Office Action at p. 19, in responding to Applicants' arguments, cited Corts at paragraph 0207 for the proposition that data content is broadcast at regular intervals during particular times of day in Corts regardless of whether a user initiates a request for the data. If the Office is suggesting by this statement that Pyhalammi should be modified to do away

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with the user's request for data content, Applicants respectfully submit that doing so would render Pyhalammi unsuitable for its intended purpose, which, as noted above, is to respond to and fulfill a user's request for data content.

Indeed, the arguments of Sections C and D combined present the Office with a "catch 22." Applicants contend (Section C) that the Office's hypothetical modification cannot satisfy the claim limitation of "processing data content to be pushed to the digital radio broadcast receivers of the users via digital radio broadcast transmission without user-initiated requests for the data content." To the extent the Office would modify Pyhalammi to negate Pyhalammi's requirement of a user request for data content (to satisfy the noted claim limitation), doing so would be impermissible since it would render Pyhalammi unsuitable for its intended purpose. The rejection is plainly flawed.

E. The Office's rejection is internally inconsistent.

The Office's rejection is internally consistent. As noted above, in attempt to address the claim limitation of processing data content without a user-initiated request for the data content, the Office Action at p. 19 substantially changes its position in a facially inconsistent manner. Whereas the Office structures the foundation of its rejection to rely upon the scheduling of Pyhalammi as explained above, the Office then, in responding to Applicants' arguments, cites to Corts paragraph 0207 for the proposition that data content is broadcast at regular intervals during particular times of day in Corts regardless of whether a user initiates a request for the data. In doing so, the Office is plainly citing how data is scheduled in Corts. The Office cannot on one hand cite the scheduling of Pyhalammi in building its rejection, and then substantially change theories to rely upon scheduling of Corts as an afterthought in responding to Applicants' arguments.

For at least the above-noted reasons, and for other reasons already of record, withdrawal of the rejections and allowance of independent claims 1, 26, 39 and 93 are respectfully requested. The remaining claims are allowable at least by virtue of dependency.

The Office Action includes further rejections of various dependent claims in view of other combinations of applied references and in view of Official Notice:

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claims 2, 3, and 67-68 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Miller (U.S. Publication No. 2003/0055977);

claims 4 and 69 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Hirayama (U.S. Publication No. 2006/0069718);

claims 9 and 74 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Kadyk et al. (U.S. Patent No. 7,046,691);

claims 10, 17, 24, 75, 82 and 88 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Official Notice;

claims 11 and 76 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Marlow (U.S. Publication No. 2003/0046670);

claims 12 and 77 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Ellis et al. (U.S. Publication No. 2004/0194131);

claims 19 and 84 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and further in view of Thompson et al. (U.S. Patent No. 6,907,247);

claims 6-7 and 71-72 were rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and Hirayama and further in view of Lin et al. (U.S. Publication No. 2002/0146016);

claim 70 was rejected under 35 U.S.C. § 103(a) over Pyhalammi in view of Corts and Hirayama and further in view of Garrity.

It is respectfully submitted that the rejections of these claims are either moot or overcome by the arguments set forth above in connection with the independent claims. The Office's reliance upon these secondary references does not make up for the deficiencies of Pyhalammi and Corts discussed above with respect to the independent claims.

Accordingly, withdrawal of these rejections and allowance of the above-noted claims are respectfully requested for at least the above-noted reasons.

Conclusion

Therefore, all objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

The Commissioner is authorized to charge any fees that may be required by this paper to Jones Day Deposit Account No. 503-013 to maintain the pendency of this application.

Respectfully submitted,

Date: November 9, 2009   By: _____
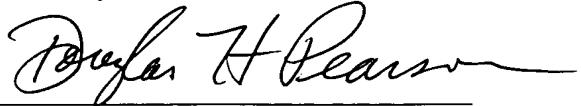
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Attachment: United States Frequency Allocations – The Radio Spectrum – October 2003

UNITED
STATES
FREQUENCY
ALLOCATIONS
THE RADIO SPECTRUM

AM

FM

RADIO SERVICES COLOR LEGEND

- AERONAUTICAL MOBILE
- AERONAUTICAL MOBILE SATELLITE
- AERONAUTICAL RADIONAVIGATION
- AMATEUR
- AMATEUR SATELLITE
- BROADCASTING
- BROADCASTING SATELLITE
- EARTH EXPLORATION SATELLITE
- FIXED
- FIXED SATELLITE

- INTER-SATELLITE
- LAND MOBILE
- LAND MOBILE SATELLITE
- MARITIME MOBILE
- MARITIME MOBILE SATELLITE
- MARITIME RADIONAVIGATION
- METEOROLOGICAL AIDS
- METEOROLOGICAL SATELLITE
- MOBILE
- MOBILE SATELLITE

- RADIO ASTRONOMY
- RADIODETERMINATION SATELLITE
- RADIOLOCATION
- RADIOLOCATION SATELLITE
- RADIONAVIGATION
- RADIONAVIGATION SATELLITE
- SPACE OPERATION
- SPACE RESEARCH
- STANDARD FREQUENCY AND TIME SIGNAL
- STANDARD FREQUENCY AND TIME SIGNAL SATELLITE

- GOVERNMENT/NON-GOVERNMENT SHARED

ACTIVITY CODE

- GOVERNMENT EXCLUSIVE
- NON-GOVERNMENT EXCLUSIVE

ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	DESCRIPTION
Primary	FIXED	Capital Letters
Secondary	Mobile	1st Capital with lower case letters

The main spectrum chart labels run from 3 kHz up to 300 GHz, and the electromagnetic spectrum diagram at bottom right shows the full radio spectrum.

THE RADIO SPECTRUM
MAGNIFIED ABOVE

VERY LOW FREQUENCY (VLF) · LF · MF · HF · VHF · UHF · SHF · EHF

RADIO · INFRARED · VISIBLE · ULTRAVIOLET · X-RAY · GAMMA-RAY · COSMIC-RAY

U.S. DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Office of Spectrum Management

October 2003